

THE VENDING Mi\$ER/SNACK Mi\$ER CHALLENGE

A SCHOOL ENERGY EFFICIENCY PROJECT



Your challenge, should you choose to accept it, is to identify two vending machines in your school that are potential Energy Hogs.

You will need to conduct a scientific assessment comparing electricity use before

and after installation of the *Vending Mi\$R*, then create a report.

GOAL #1: To document how much energy may be wasted in your school by inefficient vending machines.

GOAL #2: To prepare a report documenting your findings and provide a copy to MEEP/DEP to be used for news articles and informational purposes.

GOAL #3: To provide a copy of your report to school officials to encourage them to invest in purchasing *Mi\$ers* and thereby reduce your school's electricity bill each year by \$_____. (Your research will provide this \$ prediction.)

(You can access the Efficiency Maine website to download a form to receive a \$50 rebate for each *Mi\$er* your school decides to purchase before. Look for the link @ http://www.efficiencymaine.com/school_efficiency_program.htm)

Anticipated experiment time: ~3 weeks with daily 5-10 minute - equipment checks after initial installation time of about 1 hour. Analysis of results and writing of report could take a couple of hours.

The "Vending Mi\$er" Experimental Procedure

1. The Experimental Protocol is to

- A. Install a WATT METER to measure the daily kWhs used by each machine.
- B. Record on a chart, the kWhs used daily (24 hours).
- C. Calculate the Avg. daily kWh used then estimate the total electricity that would be used over a year.

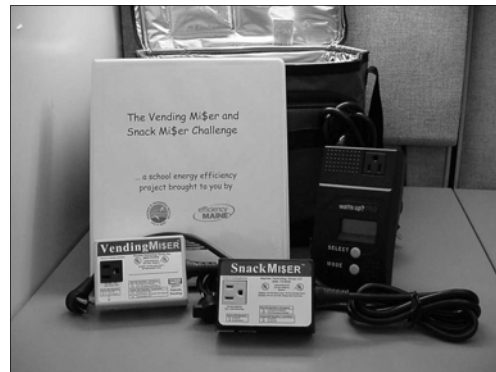
2. Next, install the *Vending Mi\$er* (for a refrigerated unit) and/or the *Snack Mi\$er* (for a snack unit)

Then you can again measure and record daily the amount of electricity used and repeat your calculations.

3. Then finally, you will analyze your data and compare the *difference* before and after the installation of the *Mi\$er*. You must obtain the amount your schools is paying for it's electrical service.

4. Using the calculations chart on the following page, see if you can predict how much energy you could save if you installed a *Mi\$er*.

We think you will be amazed at how much energy savings you will find! Please write your report and then return the equipment



"Vending Mi\$er Challenge" Kit
(Available for loan upon request.)

to us as soon as possible so another school can complete the Challenge. Let us know how you approached your school managers and whether they've agreed to purchase these worthwhile energy efficiency products.

TO BORROW THE VENDING Mi\$ER CHALLENGE KIT, Contact Peter Zack or Deb Avalone-King . Peter can be reached at 207-625-7833 or meep@psouth.net; debbie.j.avalone-king@maine.gov or 207-287-7028.

How much can you save by installing a Snack Mi\$er or Vending Mi\$er?

Vending Machine (refrigerated):

Electricity cost per kWh	
Hours machine runs per week	168
Typical power requirement (avg. watts used per hour)	400

Snack Machine:

Electricity cost per kWh	
Hours machine runs per week	168
Typical power requirement (avg. watts used per hour)	80

How much do you currently spend on your refrigerated vending machines?

- Cost per machine per week = hrs per week machine runs x power requirement per machine/1000 (to convert Watts to Kilowatts) x Electricity cost (kWh).

$$\$_{\text{blank}} = \text{blank hrs/week} \times \text{blank power requirement/1000} \times \text{blank \$ /kWh}$$

- Yearly cost = Cost per machine x 52 weeks

$$\$_{\text{blank}} = \$_{\text{blank}} \times 52 \text{ weeks}$$

- Total Energy Cost = Yearly energy cost per vending machine x total number of vending machines.

$$\$_{\text{blank}} = \$_{\text{blank}} \times \text{blank \# of vending refrigerated machines}$$

Next, repeat these same calculations for all **snack machines** at your school. Finally, figure the total cost of electricity that is used by all machines at your school by adding the electricity cost of the refrigerated vending machines with that of the snack machines.

Various studies have shown a potential energy savings of around 50 percent per machine. How much could your school save if you reduced your energy demand by 50 percent?

We can loan you a **Vending Mi\$er Challenge Kit** to test your hypothesis. Also, MEEP and MDEP will gladly come into your school to demonstrate how to use a Mi\$er and to help you begin your experiment.

"Watts" on the Web?

- <http://www.maine.gov/dep/air/education/blueskies.htm>
Take a quiz, email a question, or download air quality related material and activities that will help you engage your students in learning about air quality issues and its connections to energy.
- <http://www.katyc.org/tripplanning.htm>.
Kids and Transportation of York County offers in depth information on different modes of transportation, as well as links to teacher activities including the car free vacation activity.
- <http://www.eia.doe.gov/kids/>
Energy Ant will guide you through the Energy Information Administration kid's page. Included are many kid friendly activities as well as links to useful materials for teaching about energy.
- <http://www.energyquest.ca.gov/transportation/index.html>
A list of useful information on alternative fuel vehicles is given on this website including games and science projects for students.

